We claim:

1. A composite element having the following layer structure:

   (i) from 2 to 20 mm of metal,
   (ii) from 10 to 300 mm of polyisocyanate polyaddition products obtainable by reacting (a) isocyanates with (b) compounds which are reactive toward isocyanates in the presence of from 0.1 to 50% by volume, based on the volume of the polyisocyanate polyaddition products, of at least one gas (c) and also, if desired, (d) catalysts and/or (f) auxiliaries and/or additives,
   (iii) from 2 to 20 mm of metal.

2. A composite element as claimed in claim 1 comprising air as gas (c).

3. A composite element as claimed in claim 1 comprising foam stabilizers as (e).

4. A composite element as claimed in claim 1, wherein at least one polyether polyol is used as (b).

5. A composite element as claimed in claim 1 comprising (ii) from 10 to 70% by weight of fillers, based on the weight of (ii), as (e) auxiliaries and/or additives.

6. A composite element as claimed in claim 1, wherein (ii) has a modulus of elasticity of > 275 MPa in the temperature range from -45 to +50°C, and adhesion to (i) and (iii) of > 4 MPa, an elongation of > 30% in the temperature range from -45 to +50°C, a tensile strength of > 20 MPa and a compressive strength of > 20 MPa.

7. A process for producing a composite element as claimed in any of claims 1 to 5, wherein polyisocyanate polyaddition products (ii) which adhere to (i) and (iii) are prepared between (i) and (iii) by reacting (a) isocyanates with (b) compounds which are reactive toward isocyanates in the presence of from 0.1 to 50% by volume, based on the volume of the polyisocyanate polyaddition products, of at least one gas (c) and also, if desired, (d) catalysts and/or (e) auxiliaries and/or additives.

8. A process as claimed in claim 7, wherein the reaction is carried out in a closed mold.

9. A process as claimed in claim 7, wherein use is made of a mixture comprising:

(b1) from 40 to 98% by weight, preferably from 50 to 80% by weight, of a polyether polyalcohol having a mean functionality of from 1.9 to 3.2, preferably from 2.5 to 3, and a mean molecular weight of from 2500 to 8000,

(b2) from 1 to 30% by weight, preferably from 10 to 25% by weight, of a polyether polyalcohol having a mean functionality of from 1.9 to 3.2, preferably from 2.5 to 3, and a mean molecular weight of from 150 to 399 and

(b3) from 1 to 30% by weight, preferably from 10 to 25% by weight, of at least one aliphatic, cycloaliphatic and/or araliphatic diol having from 2 to 14, preferably from 4 to 10, carbon atoms,

where the weights indicated for (b1), (b2) and (b3) are in each case based on the weight of the sum of the components (b1), (b2) and (b3),

(e1) from 0.001 to 10 % by weight, based on the total weight of the mixture, of foam stabilizers,

and

(e2) from 0 to 5% by weight, based on the total weight of the mixture, of molecular sieves.

10. A composite element obtainable by a process as claimed in claim 7.

11. The use of a composite element as claimed in any of claims 1 to 6 or 10 as a structural component in shipbuilding, for example in ships' hulls and hold covers, or in civil engineering constructions, for example bridges.

12. A ship or bridge comprising a composite element as claimed in any of claims 1 to 6 or 10.